MATRICES
KSSM SPM
MATHS
SIR VEN

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$$(4 \quad 3) - (1 \quad -1) =$$

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$$= ((4 - 1 \quad 3 - (-1))$$

$$= (3 \quad 4)$$

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$$\begin{pmatrix} 5 & 2 \\ 4 & 1 \end{pmatrix} + \begin{pmatrix} 0 & -1 \\ -1 & 3 \end{pmatrix} =$$

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$$= \begin{pmatrix} 5+0 & 2+(-1) \\ 4+(-1) & 1+3 \end{pmatrix}$$

$$= \begin{pmatrix} 5 & 1 \\ 3 & 4 \end{pmatrix}$$

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$$\begin{pmatrix} 6 \\ 5 \end{pmatrix} + \begin{pmatrix} -2 \\ 1 \end{pmatrix} - \begin{pmatrix} 3 \\ 2 \end{pmatrix} =$$

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$$= \begin{pmatrix} 6 + (-2) - 3 \\ 5 + 1 - 2 \end{pmatrix}$$

$$= \begin{pmatrix} 1 \\ 4 \end{pmatrix}$$

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$$\begin{pmatrix} 3 & -2 \\ 0 & -1 \\ 4 & -3 \end{pmatrix} + \begin{pmatrix} -1 & 4 \\ 2 & 3 \\ 1 & 5 \end{pmatrix} =$$

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$$= \begin{pmatrix} 3+(-1) & -2+4 \\ 0+2 & -1+3 \\ 4+1 & -3+5 \end{pmatrix}$$

$$= \begin{pmatrix} 2 & 2 \\ 2 & 2 \\ 5 & 2 \end{pmatrix}$$

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$$\begin{pmatrix} 2 & 5 \\ -1 & 3 \end{pmatrix} - \begin{pmatrix} -4 & 6 \\ 0 & 7 \end{pmatrix} + \begin{pmatrix} 8 & 2 \\ -2 & -9 \end{pmatrix}$$

$=$

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$$= \begin{pmatrix} 2-(-4)+8 & 5-6+2 \\ -1-0+(-2) & 3-7+(-9) \end{pmatrix}$$

$$= \begin{pmatrix} 14 & 1 \\ -3 & -13 \end{pmatrix}$$

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Diberi / *Given* $A = \begin{pmatrix} 1 & 0 \\ 3 & -2 \end{pmatrix}$, $B = \begin{pmatrix} -2 & -2 \\ -2 & -2 \end{pmatrix}$ dan / *and* $C = \begin{pmatrix} 6 & 4 \\ -5 & 3 \end{pmatrix}$.

Cari / *Find*

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(a) $A + B + C$

$$\begin{pmatrix} 1 & 0 \\ 3 & -2 \end{pmatrix} + \begin{pmatrix} -2 & -2 \\ -2 & -2 \end{pmatrix} + \begin{pmatrix} 6 & 4 \\ -5 & 3 \end{pmatrix}$$

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$$= \begin{pmatrix} 1+(-2)+6 & 0+(-2)+4 \\ 3+(-2)+(-5) & -2+(-2)+3 \end{pmatrix}$$

$$= \begin{pmatrix} 5 & 2 \\ -4 & -1 \end{pmatrix}$$

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(b) $C - A + B$

$$\begin{pmatrix} 6 & 4 \\ -5 & 3 \end{pmatrix} - \begin{pmatrix} 1 & 0 \\ 3 & -2 \end{pmatrix} + \begin{pmatrix} -2 & -2 \\ -2 & -2 \end{pmatrix}$$

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$$= \begin{pmatrix} 6-1+(-2) & 4-0+(-2) \\ -5-3+(-2) & 3-(-2)+(-2) \end{pmatrix}$$

$$= \begin{pmatrix} 3 & 2 \\ -10 & 3 \end{pmatrix}$$

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(c) $B - A - C$

$$\begin{pmatrix} -2 & -2 \\ -2 & -2 \end{pmatrix} - \begin{pmatrix} 1 & 0 \\ 3 & -2 \end{pmatrix} - \begin{pmatrix} 6 & 4 \\ -5 & 3 \end{pmatrix}$$

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$$= \begin{pmatrix} -2-1-6 & -2-0-4 \\ -2-3-(-5) & -2-(-2)-3 \end{pmatrix}$$

$$= \begin{pmatrix} -9 & -6 \\ 0 & -3 \end{pmatrix}$$

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(d) $C + A - B$

$$\begin{pmatrix} 6 & 4 \\ -5 & 3 \end{pmatrix} + \begin{pmatrix} 1 & 0 \\ 3 & -2 \end{pmatrix} - \begin{pmatrix} -2 & -2 \\ -2 & -2 \end{pmatrix}$$

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$$= \begin{pmatrix} 6+1-(-2) & 4+0-(-2) \\ -5+3-(-2) & 3+(-2)-(-2) \end{pmatrix}$$

$$= \begin{pmatrix} 9 & 6 \\ 0 & 3 \end{pmatrix}$$

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Cari nilai x dan nilai y bagi setiap persamaan matriks berikut.

Find the value of x and of y for each of the following matrix equations.

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$$\begin{pmatrix} 3 \\ y \end{pmatrix} + \begin{pmatrix} x \\ 1 \end{pmatrix} = \begin{pmatrix} 2x \\ 4 \end{pmatrix}$$

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$$3 + x = 2x$$

$$3 = 2x - x$$

$$x = 3$$

$$y + 1 = 4$$

$$y = 4 - 1$$

$$y = 3$$

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$$\begin{pmatrix} -2 \\ 4 \\ x \end{pmatrix} - \begin{pmatrix} -1 \\ y \\ 3 \end{pmatrix} = \begin{pmatrix} -1 \\ 2 \\ -5 \end{pmatrix}$$

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$$x - 3 = -5$$

$$x = -5 + 3$$

$$x = -2$$

$$4 - y = 2$$

$$4 - 2 = y$$

$$y = 2$$

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(c) $(6 \quad x \quad 2) + (y \quad 3 \quad -4) = (-1 \quad 5 \quad 6)$

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$$x + 3 = 5$$

$$x = 5 - 3$$

$$x = 2$$

$$6 + y = -1$$

$$y = -1 - 6$$

$$y = -7$$

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(d) $\begin{pmatrix} x & 6 \\ -1 & 4 \end{pmatrix} + \begin{pmatrix} -3 & -5 \\ y & 2 \end{pmatrix} = \begin{pmatrix} -2 & 1 \\ -3 & 6 \end{pmatrix}$

ned with CamScanner

$$x + (-3) = -2$$

$$x = -2 + 3$$

$$x = 1$$

$$-1 + y = -3$$

$$y = -3 + 1$$

$$y = -2$$

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Cari matriks P bagi setiap persamaan matrik yang berikut.

Find matrix P in each of the following matrix equations.

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(a) $\begin{pmatrix} 2 \\ 3 \end{pmatrix} + P = \begin{pmatrix} 5 \\ -4 \end{pmatrix}$

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$$P = \begin{pmatrix} 5 \\ -4 \end{pmatrix} - \begin{pmatrix} 2 \\ 3 \end{pmatrix}$$

$$= \begin{pmatrix} 5-2 \\ -4-3 \end{pmatrix}$$

$$= \begin{pmatrix} 3 \\ -7 \end{pmatrix}$$

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$$(8 \quad 2 \quad -3) - (6 \quad 1 \quad -5) \equiv P$$

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$$P = (8 - 6 \quad 2 - 1 \quad -3 - (-5))$$
$$= (2 \quad 1 \quad 2)$$

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$$\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix} + \begin{pmatrix} 4 & -3 \\ 0 & 2 \end{pmatrix} = \begin{pmatrix} -3 & 2 \\ -4 & 7 \end{pmatrix} + P$$

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$$\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix} + \begin{pmatrix} 4 & -3 \\ 0 & 2 \end{pmatrix} - \begin{pmatrix} -3 & 2 \\ -4 & 7 \end{pmatrix} = P$$

$$\begin{pmatrix} 3+4-(-3) & 2+(-3)-2 \\ -1+0-(-4) & 1+2-7 \end{pmatrix} = P$$

$$P = \begin{pmatrix} 10 & -3 \\ 3 & -4 \end{pmatrix}$$

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(a) $3\begin{pmatrix} 1 \\ -2 \end{pmatrix}$

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$$\begin{bmatrix} 3(1) \\ 3(-2) \end{bmatrix}$$

$$\begin{bmatrix} 3 \\ -6 \end{bmatrix}$$

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(b) $\frac{1}{2}\begin{pmatrix} 6 & -4 \\ -8 & 5 \end{pmatrix}$

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$$= \begin{pmatrix} \frac{1}{2}(6) & \frac{1}{2}(-4) \\ \frac{1}{2}(-8) & \frac{1}{2}(5) \end{pmatrix}$$

$$= \begin{pmatrix} 3 & -2 \\ -4 & \frac{5}{2} \end{pmatrix}$$

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$$5\begin{pmatrix} 1 & 0 & 4 \\ -3 & 0.3 & 2 \end{pmatrix}$$

Scanned with CamScanner

$$= \begin{pmatrix} 5(1) & 5(0) & 5(4) \\ 5(-3) & 5(0.3) & 5(2) \end{pmatrix}$$

$$= \begin{pmatrix} 5 & 0 & 20 \\ -15 & 1.5 & 10 \end{pmatrix}$$

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$$\frac{1}{5}\begin{pmatrix} 10 \\ -5 \end{pmatrix} + 3\begin{pmatrix} 1 \\ 3 \end{pmatrix}$$

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$$= \begin{pmatrix} \frac{1}{5}(10) \\ \frac{1}{5}(-5) \end{pmatrix} + \begin{pmatrix} 3(1) \\ 3(3) \end{pmatrix}$$

$$= \begin{pmatrix} 2+3 \\ -1+9 \end{pmatrix}$$

$$= \begin{pmatrix} 5 \\ 8 \end{pmatrix}$$

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$$2\begin{pmatrix} 2 & -1 \\ -4 & 3 \end{pmatrix} - \frac{1}{4}\begin{pmatrix} 12 & 16 \\ 8 & 20 \end{pmatrix}$$

Scanned with CamScanner

$$= \begin{pmatrix} 2(2) & 2(-1) \\ 2(-4) & 2(3) \end{pmatrix} - \begin{pmatrix} \frac{1}{4}(12) & \frac{1}{4}(16) \\ \frac{1}{4}(8) & \frac{1}{4}(20) \end{pmatrix}$$

$$= \begin{pmatrix} 4 & -2 \\ -8 & 6 \end{pmatrix} - \begin{pmatrix} 3 & 4 \\ 2 & 5 \end{pmatrix}$$

$$= \begin{pmatrix} 4-3 & -2-4 \\ -8-2 & 6-5 \end{pmatrix}$$

$$= \begin{pmatrix} 1 & -6 \\ -10 & 1 \end{pmatrix}$$

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$$\frac{1}{3}\begin{pmatrix} 1.2 & 9 \\ -6 & 3 \end{pmatrix} + 4\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} - \begin{pmatrix} -3 & 5 \\ -5 & 0.8 \end{pmatrix}$$

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$$= \begin{pmatrix} \frac{1}{3}(1.2) & \frac{1}{3}(9) \\ \frac{1}{3}(-6) & \frac{1}{3}(3) \end{pmatrix} + \begin{pmatrix} 4(1) & 4(2) \\ 4(3) & 4(4) \end{pmatrix} - \begin{pmatrix} -3 & 5 \\ -5 & 0.8 \end{pmatrix}$$

$$= \begin{pmatrix} 0.4 & 3 \\ -2 & 1 \end{pmatrix} + \begin{pmatrix} 4 & 8 \\ 12 & 16 \end{pmatrix} - \begin{pmatrix} -3 & 5 \\ -5 & 0.8 \end{pmatrix}$$

$$= \begin{pmatrix} 0.4 + 4 - (-3) & 3 + 8 - 5 \\ -2 + 12 - (-5) & 1 + 16 - 0.8 \end{pmatrix}$$

$$= \begin{pmatrix} 7.4 & 6 \\ 15 & 16.2 \end{pmatrix}$$

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Cari nilai x dan nilai y bagi setiap persamaan matriks berikut.

Find the value of x and of y for each of the following matrix equations.

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$$\begin{pmatrix} x \\ y \end{pmatrix} + 3\begin{pmatrix} -2 \\ -1 \end{pmatrix} = \begin{pmatrix} -x \\ 7 \end{pmatrix}$$

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$$x + 3(-2) = -x$$
$$x + x = 6$$
$$2x = 6$$
$$x = 3$$

$$y + 3(-1) = 7$$
$$y = 7 + 3$$
$$y = 10$$

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$$\left) - \frac{1}{5}\begin{pmatrix} 10 & 20 \\ y & -5 \end{pmatrix} = \begin{pmatrix} -5 & 9 \\ 2 & 8 \end{pmatrix}\right.$$

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$$x - \frac{1}{5}(20) = 9$$

$$x - 4 = 9$$

$$x = 9 + 4$$

$$x = 13$$

$$4 - \frac{1}{5}(y) = 2$$

$$4 - 2 = \frac{1}{5}y$$

$$2 = \frac{1}{5}y$$

$$y = 10$$

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$$\frac{1}{2}\begin{pmatrix} -8 & 6 \\ 10 & 2 \end{pmatrix} - \frac{1}{3}\begin{pmatrix} 12 & x \\ 6 & 3 \end{pmatrix} = \begin{pmatrix} -8 & 9 \\ y & 0 \end{pmatrix}$$

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$$\frac{1}{2} \times 6 - \frac{1}{3} \times x = 9$$

$$3 - \frac{1}{3}x = 9$$

$$3 - 9 = \frac{1}{3}x$$

$$-6 = \frac{1}{3}x$$

$$x = -18$$

$$\frac{1}{2} \times 10 - \frac{1}{3} \times 6 = y$$

$$5 - 2 = y$$

$$y = 3$$

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$$\frac{1}{3}\begin{pmatrix} y & 15 \\ -6 & 6 \end{pmatrix} + \frac{1}{4}\begin{pmatrix} -32 & -16 \\ 4 & x \end{pmatrix} = \begin{pmatrix} -11 & 1 \\ -3 & 5 \end{pmatrix}$$

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$$\frac{1}{3} \times y + \frac{1}{4} \times (-32) = -11$$

$$\frac{1}{3}y - 8 = -11$$

$$\frac{1}{3}y = -11 + 8$$

$$\frac{1}{3}y = -3$$

$$y = -9$$

$$\frac{1}{3} \times 6 + \frac{1}{4} \times x = 5$$

$$2 + \frac{1}{4}x = 5$$

$$\frac{1}{4}x = 5 - 2$$

$$\frac{1}{4}x = 3$$

$$x = 12$$

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$$m\begin{pmatrix}18\\3\end{pmatrix}-\begin{pmatrix}2\\-5\end{pmatrix}=\begin{pmatrix}4\\6\end{pmatrix}$$

Scanned with CamScanner

$$\begin{pmatrix} 18m \\ 3m \end{pmatrix} - \begin{pmatrix} 2 \\ -5 \end{pmatrix} = \begin{pmatrix} 4 \\ 6 \end{pmatrix}$$

$$\begin{pmatrix} 18m - 2 \\ 3m - (-5) \end{pmatrix} = \begin{pmatrix} 4 \\ 6 \end{pmatrix}$$

$$18m - 2 = 4$$

$$18m = 6$$

$$m = \frac{1}{3}$$

atau / or

$$3m + 5 = 6$$

$$3m = 1$$

$$m = \frac{1}{3}$$

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$$m\begin{pmatrix} 9 & 6 \\ 6 & 12 \end{pmatrix} + \begin{pmatrix} 3 & 3 \\ 3 & 3 \end{pmatrix} = \begin{pmatrix} 6 & 5 \\ 5 & 7 \end{pmatrix}$$

Scanned with CamScanner

$$\begin{pmatrix} 9m & 6m \\ 6m & 12m \end{pmatrix} + \begin{pmatrix} 3 & 3 \\ 3 & 3 \end{pmatrix} = \begin{pmatrix} 6 & 5 \\ 5 & 7 \end{pmatrix}$$

$$\begin{pmatrix} 9m+3 & 6m+3 \\ 6m+3 & 12m+3 \end{pmatrix} = \begin{pmatrix} 6 & 5 \\ 5 & 7 \end{pmatrix}$$

$$9m + 3 = 6$$

$$9m = 6 - 3$$

$$9m = 3$$

$$m = \frac{1}{3}$$

atau / *or*

$$6m + 3 = 5$$

$$6m = 5 - 3$$

$$6m = 2$$

$$m = \frac{2}{6} = \frac{1}{3}$$

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$$2\begin{pmatrix} 3 & 0 \\ 3 & 0 \end{pmatrix} + m\begin{pmatrix} 1 & 7 \\ 2 & -2 \end{pmatrix} = \begin{pmatrix} 4 & 14 \\ 10 & -4 \end{pmatrix}$$

Scanned with CamScanner

$$\begin{pmatrix} 6 & 0 \\ 6 & 0 \end{pmatrix} + \begin{pmatrix} -m & 7m \\ 2m & -2m \end{pmatrix} = \begin{pmatrix} 4 & 14 \\ 10 & -4 \end{pmatrix}$$

$$\begin{pmatrix} 6-m & 0+7m \\ 6+2m & 0-2m \end{pmatrix} = \begin{pmatrix} 4 & 14 \\ 10 & -4 \end{pmatrix}$$

$$6 - m = 4$$

$$6 - 4 = m$$

$$m = 2$$

atau / or

$$0 - 2m = -4$$

$$m = \frac{-4}{-2}$$

$$m = 2$$

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9 Tentukan peringkat matriks pertama dan kedua, seterusnya nyatakan sama ada dua matriks itu boleh didarabkan dan nyatakan peringkat hasil darabnya. / *Determine the order of the first and second matrices, then specify whether the two matrices can be multiplied and state the order of the product.*

Matriks *Matrix*	**Peringkat matriks pertama (RoCo)** *Order of the 1st matrix (RoCo)*	**Peringkat matriks kedua (RoCo)** *Order of the 2nd matrix (RoCo)*	**Boleh atau tidak boleh didarabkan** *Can or cannot be multiplied*	**Peringkat hasil darab** *Order of the product*
Contoh / *Example* $\begin{pmatrix} 4 & 7 \\ -3 & 1 \end{pmatrix}\begin{pmatrix} 2 \\ -1 \end{pmatrix}$	2×2 (Sama / *Same*)	2×1	Boleh *Can*	2×1
(a) $\begin{pmatrix} 5 \\ -3 \end{pmatrix}\begin{pmatrix} 3 & 6 \\ -2 & 0 \end{pmatrix}$				
(c) $\begin{pmatrix} 7 & 7 \\ -1 & 2 \\ -4 & 5 \end{pmatrix}\begin{pmatrix} 3 & 6 \\ -2 & 0 \end{pmatrix}$				

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2×1	2×2	Tidak boleh *Cannot*	–
3×2	2×2	Boleh *Can*	3×2

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Cari hasil darab bagi matriks berikut (Menggunakan kaedah RoCo).

Find the product of the following matrix (By using RoCo Method).

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(3) $\begin{vmatrix} 3 & 3 \\ 5 & \end{vmatrix}$ 12 −1)

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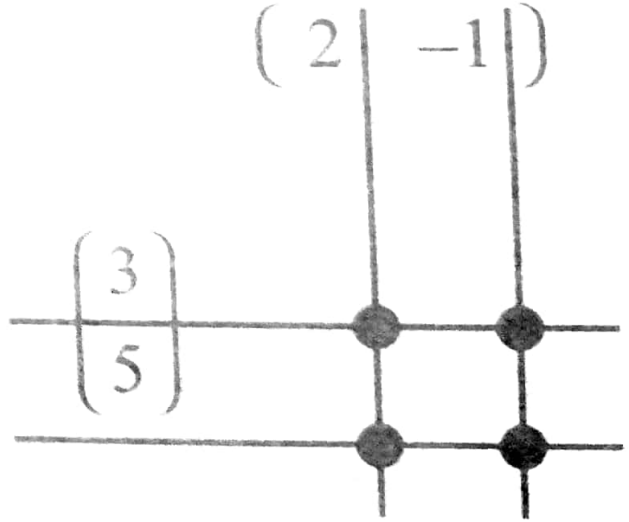
$$= \begin{pmatrix} 3(2) & 3(-1) \\ 5(2) & 5(-1) \end{pmatrix}$$

$$= \begin{pmatrix} 6 & -3 \\ 10 & -5 \end{pmatrix}$$



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$$\begin{pmatrix} 3 & -1 \\ 5 & 2 \end{pmatrix} \begin{pmatrix} 1 \\ 4 \end{pmatrix}$$

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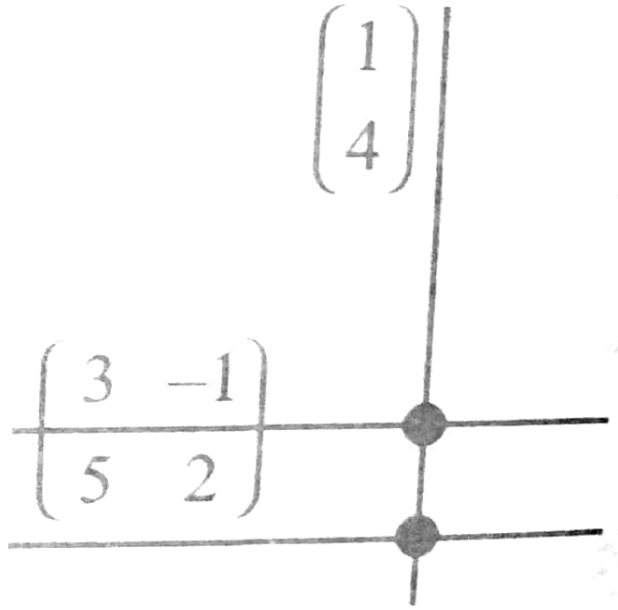
$$= \begin{pmatrix} 3(1) + (-1)(4) \\ 5(1) + 2(4) \end{pmatrix}$$

$$= \begin{pmatrix} -1 \\ 13 \end{pmatrix}$$



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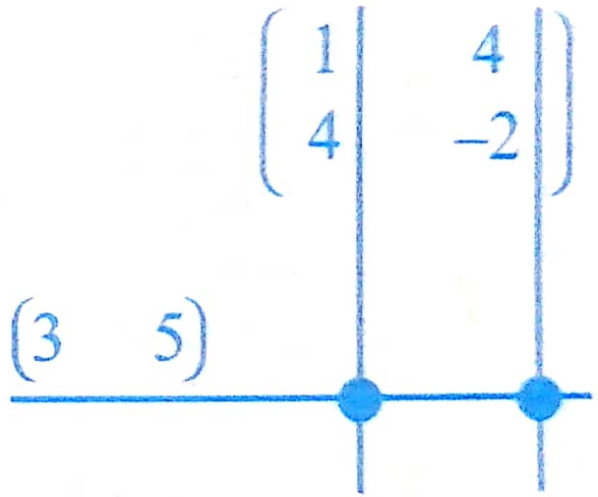
$$\begin{pmatrix} 3 & 5 \end{pmatrix} \begin{pmatrix} 1 & 4 \\ 4 & -2 \end{pmatrix}$$

Scanned with CamScanner

$$= [3(1) + 5(4) \quad 3(4) + 5(-2)]$$

$$= (23 \quad 2)$$



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$$) \begin{pmatrix} 5 & -2 & 1 \end{pmatrix} \begin{pmatrix} 2 \\ 3 \\ 4 \end{pmatrix}$$

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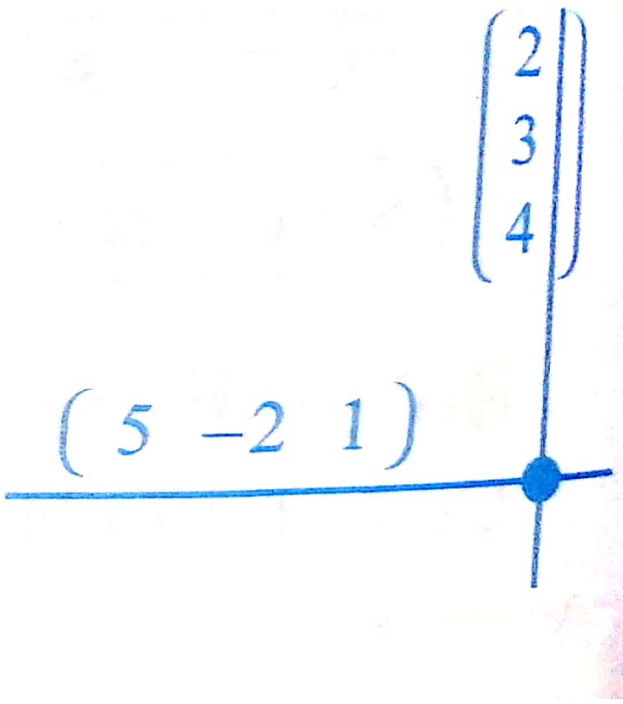
$$= [5(2) + (-2)(3) + 1(4)]$$
$$= (8)$$



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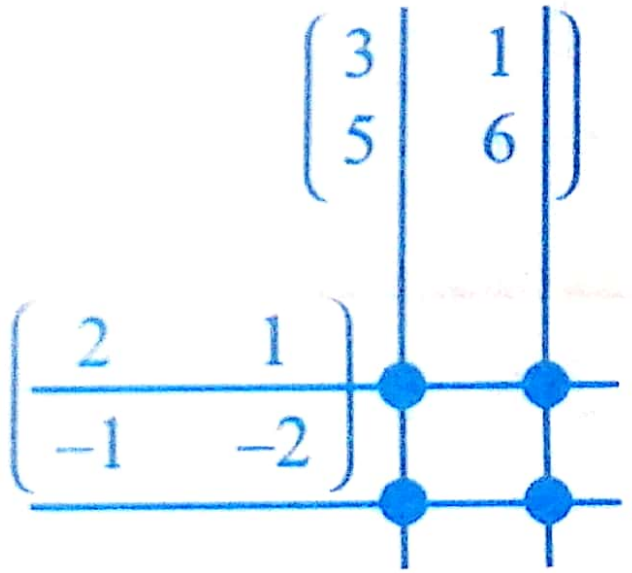
$$\begin{pmatrix} 2 & 1 \\ -1 & -2 \end{pmatrix} \begin{pmatrix} 3 & 1 \\ 5 & 6 \end{pmatrix}$$

Scanned with CamScanner

$$= \begin{pmatrix} 2(3) + 1(5) & 2(1) + 1(6) \\ (-1)(3) + (-2)(5) & (-1)(1) + (-2)(6) \end{pmatrix}$$

$$= \begin{pmatrix} 11 & 8 \\ -13 & -13 \end{pmatrix}$$



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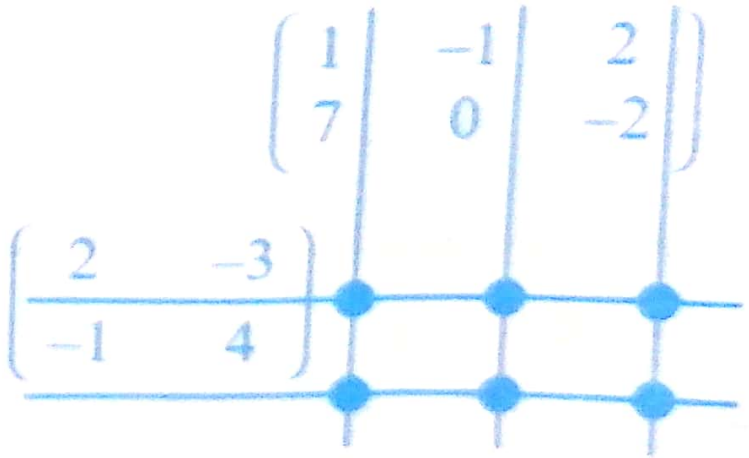
$$\begin{pmatrix} 2 & -3 \\ -1 & 4 \end{pmatrix}\begin{pmatrix} 1 & -1 & 2 \\ 7 & 0 & -2 \end{pmatrix}$$

Scanned with CamScanner

$$= \begin{pmatrix} 2(1) + (-3)(7) & 2(-1) + (-3)(0) & 2(2) + (-3)(-2) \\ (-1)(1) + (4)(7) & (-1)(-1) + 4(0) & (-1)(2) + 4(-2) \end{pmatrix}$$

$$= \begin{pmatrix} -19 & -2 & 10 \\ 27 & 1 & -10 \end{pmatrix}$$



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1 Cari hasil darab bagi matriks berikut dalam sebutan x. / *Find the product of the following matrix in terms of x.*

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(a) $\begin{pmatrix} x & 2 \end{pmatrix} \begin{pmatrix} 4 & 3x \\ x & -1 \end{pmatrix}$

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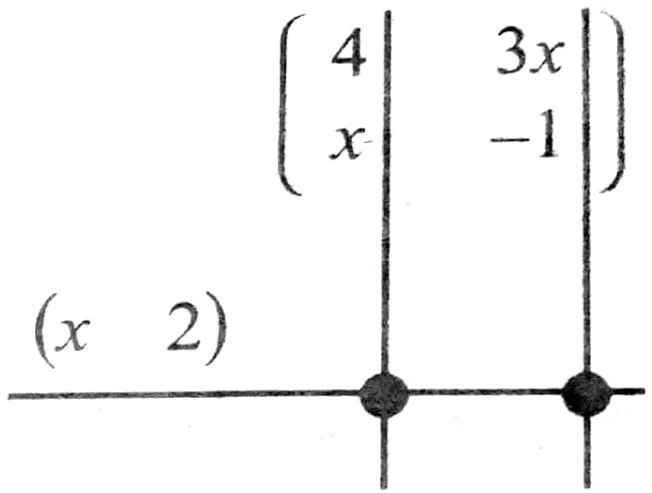
$$= [x(4) + 2(x) \quad x(3x) + 2(-1)]$$
$$= (6x \quad 3x^2 - 2)$$



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(b) $\begin{pmatrix} 2x & -3 \\ 1 & x \end{pmatrix}\begin{pmatrix} -4 \\ x \end{pmatrix}$

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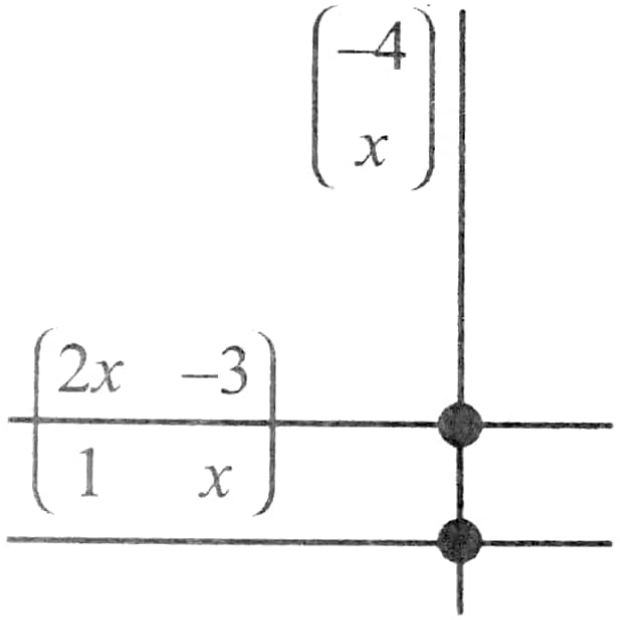
$$= \begin{pmatrix} 2x(-4) + (-3)(x) \\ 1(-4) + x(x) \end{pmatrix}$$

$$= \begin{pmatrix} -11x \\ -4 + x^2 \end{pmatrix}$$



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(c) $\begin{pmatrix} x & -2 \\ 2x & 3 \end{pmatrix}\begin{pmatrix} 4 & 3 \\ x & 1 \end{pmatrix}$

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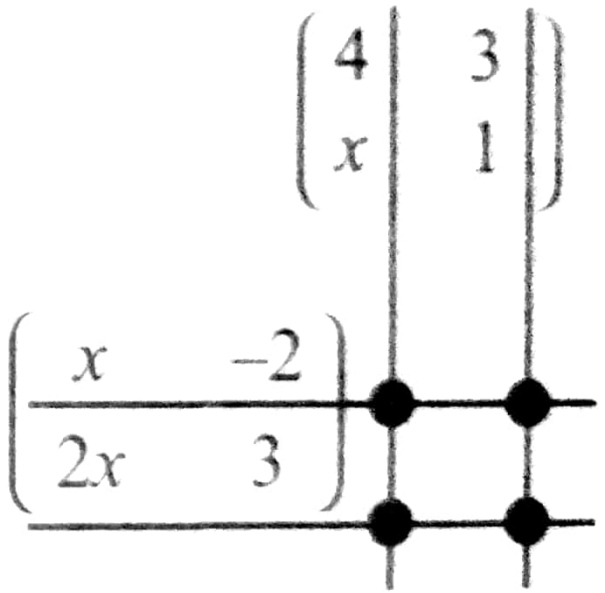
$$= \begin{pmatrix} x(4) + (-2)x & x(3) + (-2)(1) \\ 2x(4) + 3(x) & 2x(3) + 3(1) \end{pmatrix}$$

$$= \begin{pmatrix} 2x & 3x - 2 \\ 11x & 6x + 3 \end{pmatrix}$$



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(a) Diberi bahawa $\begin{pmatrix} 4 & 2 \\ -2 & x \end{pmatrix}\begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} = \begin{pmatrix} y & 10 \\ -2 & 4 \end{pmatrix}$, cari nilai x dan nilai y.

Given that $\begin{pmatrix} 4 & 2 \\ -2 & x \end{pmatrix}\begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} = \begin{pmatrix} y & 10 \\ -2 & 4 \end{pmatrix}$, ***find the value*** *of x and of y.*

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$$-2(2) + x(1) = 4$$
$$-4 + x = 4$$
$$x = 4 + 4$$
$$x = 8$$

$$4(1) + 2(0) = y$$
$$4 = y$$
$$y = 4$$

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(b) Diberi bahawa $\begin{pmatrix} 2 \\ m \end{pmatrix}(n \quad 3) = \begin{pmatrix} n & 6 \\ 4 & 12 \end{pmatrix}$, cari nilai m dan nilai n.

Given that $\begin{pmatrix} 2 \\ m \end{pmatrix}(n \quad 3) = \begin{pmatrix} n & 6 \\ 4 & 12 \end{pmatrix}$, *find the value of m and of n.*

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$$\begin{pmatrix} 2n & 6 \\ mn & 3m \end{pmatrix} = \begin{pmatrix} n & 6 \\ 4 & 12 \end{pmatrix}$$

$$3m = 12 \qquad 4n = 4$$

$$m = 4 \qquad n = 1$$

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(c) Diberi bahawa $\begin{pmatrix} 4 & p \\ \frac{1}{q} & -p \end{pmatrix}\begin{pmatrix} 7q \\ -3 \end{pmatrix} = \begin{pmatrix} 11p \\ 13 \end{pmatrix}$, cari nilai p dan nilai q.

Given that $\begin{pmatrix} 4 & p \\ \frac{1}{q} & -p \end{pmatrix}\begin{pmatrix} 7q \\ -3 \end{pmatrix} = \begin{pmatrix} 11p \\ 13 \end{pmatrix}$, *find the value of p and of q.*

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$$\begin{bmatrix} 4(7q) + p(-3) \\ \frac{1}{q}(7q) + (-p)(-3) \end{bmatrix} = \begin{bmatrix} 11p \\ 13 \end{bmatrix}$$

$$7 + 3p = 13$$
$$3p = 13 - 7$$
$$3p = 6$$
$$p = 2$$

$$28q - 3(2) = 11(2)$$
$$28q = 22 + 6$$
$$28q = 28$$
$$q = 1$$

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Cari hasil darab matriks berikut (Menggunakan kaedah RoCo).

Find the product of the following matrices (By using RoCo Method).

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$$\begin{pmatrix} \frac{1}{2} & -1 \\ 8 & 5 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

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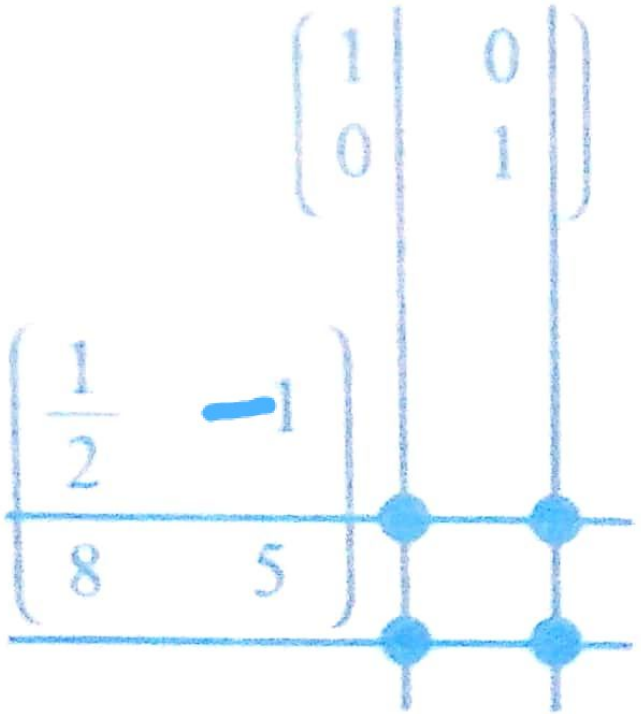
$$= \begin{pmatrix} \frac{1}{2}(1) + (-1)(0) & \frac{1}{2}(0) + (-1)(1) \\ 8(1) + (5)(0) & 8(0) + (5)(1) \end{pmatrix}$$

$$= \begin{pmatrix} \frac{1}{2} & -1 \\ 8 & 5 \end{pmatrix}$$



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$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}\begin{pmatrix} 6 & -5 \\ 8 & -3 \end{pmatrix}+\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}\begin{pmatrix} 3 & -2 \\ 7 & 1 \end{pmatrix}$$

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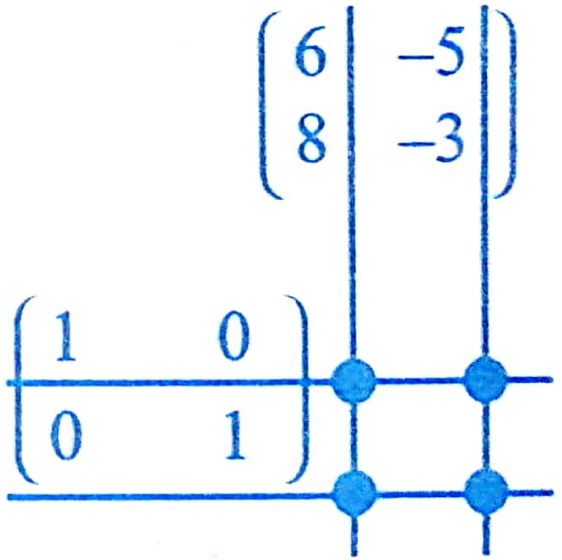
$$= \begin{bmatrix} 1(6)+0(8) & 1(-5)+0(-3) \\ 0(6)+1(8) & 0(-5)+1(-3) \end{bmatrix} +$$

$$\begin{bmatrix} 1(3)+0(7) & 1(-2)+0(-1) \\ 0(3)+1(7) & 0(-2)+1(-1) \end{bmatrix}$$

$$= \begin{bmatrix} 6 & -5 \\ 8 & -3 \end{bmatrix} + \begin{bmatrix} 3 & -2 \\ 7 & -1 \end{bmatrix}$$

$$= \begin{bmatrix} 6+3 & -5+(-2) \\ 8+7 & -3+(-1) \end{bmatrix}$$

$$= \begin{bmatrix} 9 & -7 \\ 15 & -4 \end{bmatrix}$$



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$$\left[\begin{pmatrix} 4 & 3 \\ 5 & -7 \end{pmatrix}\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}\right] - \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

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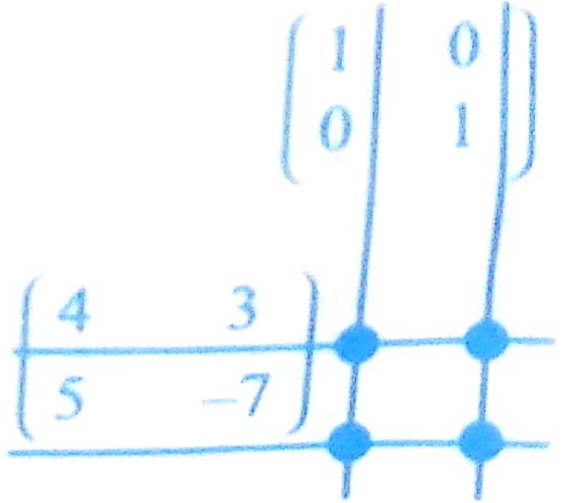
$$= \begin{pmatrix} 4(1)+3(0) & 4(0)+3(1) \\ 5(1)+(-7)(0) & 5(0)+(-7)(1) \end{pmatrix} - \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$= \begin{pmatrix} 4 & 3 \\ 5 & -7 \end{pmatrix} - \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$= \begin{pmatrix} 4-1 & 3-0 \\ 5-0 & -7-1 \end{pmatrix}$$

$$= \begin{pmatrix} 3 & 3 \\ 5 & -8 \end{pmatrix}$$



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